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APPLY PESTICIDES CORRECTLY

A GUIDE FOR COMMERCIAL APPLICATORS

AGRICULTURAL PEST CONTROL-- ANIMAL

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDE PROGRAMS
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PREFACE

Federal regulations establish general and specific standards that you must meet before you can use certain pesticides. Your State will provide material which you may study to help you meet the *general* standards. This guide contains basic information to help you meet the *specific* standards for applicators who are engaged in Agriculture-Animal pest control.

Because the guide was prepared to cover the entire nation, some information important to your State may not be included. The State agency in charge of your training can provide the other materials you should study.

This guide will give you information about:
- common pests of agricultural animals,
- methods for controlling these pests, and
- pesticides used in animal agriculture.

PESTS OF AGRICULTURAL ANIMALS

Agricultural animals are attacked by mites and ticks, insects, and animal predators. These pests affect animal productivity by:

- killing animals,
- spreading disease agents and parasitic worms,
- causing loss of blood,
- causing anemia,
- causing physical damage to animals or animal products,
- reducing weight gains,
- reducing milk or egg production, and
- decreasing animal resistance to other diseases.

CATTLE

The insects and related pests that attack cattle include:

Horn Fly

This small, bloodsucking parasite remains on the animal most of the time. The female lays eggs in fresh cattle droppings. The larvae develop there, and the adult fly then migrates to host animals.

Horn Fly

Control may be achieved by the use of dust bags, sprays, oilers, and mineral or feed additives. Self-applicators are most effective when cattle are forced to use them daily. Cattle sprayed by ground sprayer or aerial ULV (ultra low volume) sprayer require repeated treatments.

Face Fly

The face fly also develops in single fresh droppings. Adult face flies cluster around the eyes and noses of animals. These flies feed on animal secretions, nectar and dung liquids. The life cycle from egg to adult is completed in 2 to 3 weeks in favorable weather.

Face Fly

Control is difficult due to the mobility of the flies and short effective life of insecticides. Daily hand treatment of animals or daily forced use of dust bags or oilers give the best results. Daily feedings of systemic insecticides as feed supplements may aid in control.

Heel Fly (Cattle Grub)

These flies have one generation each year. They lay eggs on the host animals. The larvae (grubs) enter the skin at the base of the hairs. After migrating to the gullet or spinal canal, the larvae move to the loin area. Here they cut breathing holes through the hide and produce cysts (warbles). The fully grown grubs emerge through the breathing holes, drop to the ground, and pupate in the soil. Adults emerge in warm weather.

Heel Fly

Systemic insecticides provide the best grub control. They can be applied as sprays, dips, pour-ons, spot treatments, and as feed supplements. To avoid harm to the treated animal, the systemic insecticide must be applied only at certain times during the fly's life cycle. Follow the treatment cutoff dates for the region as listed on the label. Post-treatment symptoms from incorrect treatment may include bloat, inability to eat or take water, diarrhea, staggering, excessive salivation, and partial hindquarter paralysis. Systemics cannot be used on milking dairy cattle.

House and Stable Flies

Houseflies can transmit many animal diseases. Houseflies feed on manure and animal secretions through sponging mouthparts. Large numbers of flies may annoy feeder and dairy cattle, causing reduced efficiency or production and increased bacterial counts in milk.

House Fly

The stable fly is similar to the housefly but sucks blood through piercing mouthparts which protrude spearlike from under the head of the adult.

Stable Fly

Both house and stable flies develop in decaying silage, spilled feeds, animal bedding, manure, moist hay and other forage, and aquatic plants. Sanitation is the key step in control of these flies. Disposal of animal wastes and organic debris is essential.

Chemical control works only when used in conjunction with good sanitation practices. Use directed sprays to apply persistent insecticides to fly resting areas, such as fences, feed bunks, buildings, and vegetation. Space sprays by ground or aerial application may also be effective. Milk regulations limit pesticides that may be used at dairies.

Horse and Deer Flies

Horse and deer flies are common biting flies of cattle and horses. The females are strong fliers with painful bites. The bites usually continue to bleed after the fly leaves.

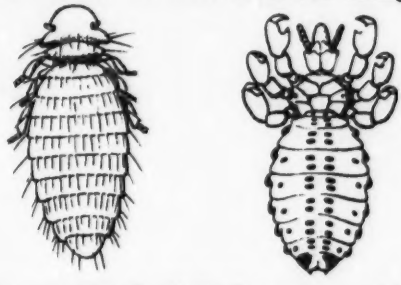
The life cycle takes from 70 days to 2 years. Immature stages live in aquatic or semiaquatic places.

Control of these flies is difficult because they may migrate over long distances and do not stay on the host long enough to be killed by residual sprays. Some repellents give 2- to 5-day control.

Chewing and Sucking Lice

Lice spend their entire life cycle on the animal. They hatch from eggs deposited on the hair. They feed by sucking blood or chewing on the skin. Most louse populations are greatest during cold weather months. Cattle tail lice are more numerous during

Chewing and Sucking Lice



summer. Lice are spread chiefly by contact with infested animals. The use of insecticides will control louse populations. More than one application may be necessary at 2- to 3-week intervals. The use of dust bags and oilers aids in louse control.

Mosquitoes

Mosquitoes transmit diseases of animals and man and may affect efficiency of animal meat and milk production. Life cycle of mosquitoes vary greatly, depending on the type of mosquito and the environment. The female lays eggs on water or in areas subject to flooding. The larval and pupal stages develop in water and the adult stage emerges from the pupa.

Mosquito

The best control method is to eliminate or minimize standing-water areas, such as potholes, water tanks, unused receptacles, and other manmade containers. Insecticides are available to control both larvae and adults. You can control mosquitoes with directed sprays or by use of foggers and ULV applicators. Use them in mosquito resting areas, such as open barns and sheds, weeds, grass, trees, and shrubbery.

Ticks

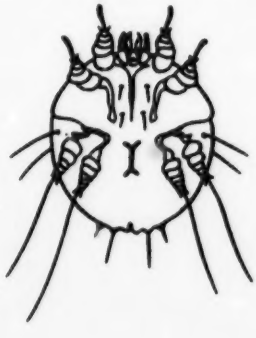
Ticks are parasites of cattle. They can transmit diseases. In addition, loss of blood and injection of toxins during tick feeding affect animal health, weight gains, and milk production.

Hard Tick

Correct identification of ticks is important for economical and effective control. To control ear-infesting ticks (such as Gulf Coast and spinose ear ticks), apply pesticides directly to the ear as sprays, smears, or dusts. To control species infesting the body (such as the lone star tick), treat the entire body with high pressure sprays or dips. Treatment must be repeated for some tick species. Tick control may be required during any season of the year.

Cattle Scabies

Scabies is caused by an infestation of a specific mite. These mites tunnel in the skin, causing a mange.



Cattle Scabie

Scabies cause:
- skin irritation,
- excessive hair, skin, and water loss,
- severe weight loss, and
- reduced milk production.

They also make the animal more susceptible to other diseases. Transmission is by contact with infested animals or mite-contaminated material.

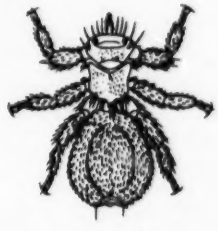
Treat infested animals by spraying or dipping them in insecticides registered for this purpose. Scabies treatment is regulated by Federal quarantine laws.

SHEEP AND GOATS

The insects and related pests that attack sheep and goats include:

Sheep Ked

The sheep ked adult is a wingless fly which spends its entire life cycle on sheep. It is occasionally found on goats.



The nearly mature larvae are deposited on wool strands, where they pupate almost immediately. The adult emerges and begins to feed on blood.

The sheep ked reduces efficiency of sheep and causes a damaging hide condition called "cockle". Apply insecticides as sprays, dusts, or dips. Application at shearing gives the most efficient control.

Chewing and Sucking Lice

Sheep and goat lice cause:
- intense skin irritation, resulting in reduced quality and quantity of fleeces, and
- blood loss, resulting in anemia.

Transmission is by contact with infested animals. Insecticides applied as dips, sprays, or dusts will provide louse control.

Sheep Scabies

This pest is under Federal quarantine regulations.

Nose Bot

Living fly larvae are deposited in or around the nostrils of the sheep. The larvae migrate to head sinuses, where they develop. At maturity, they migrate back down the nasal passages and drop to the ground, where they pupate and become adults. Migration of the larvae irritates the nasal membranes and is often followed by secondary infections. No registered treatment is currently available.

Wool Maggot (Black Blow Fly)

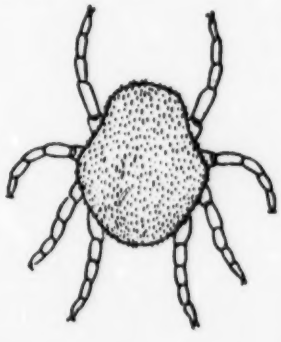
This fly lays eggs in dirty wool or on wounds. After hatching, the fly maggots spread over the animal and feed on dead tissue under the fleece. Their damage sometimes causes death.

Early shearing and medication of wounds before blow fly season is an effective preventive measure. Clipping and cleaning the fleece will help prevent infestations. Insecticide sprays, dips, or smears are effective in controlling this pest.

Spinose Ear Tick

This is the only tick which normally poses a problem to sheep. Its feeding on the inner folds of the ear produces much discomfort and results in a breakdown of the ears.

The spinose ear tick can be controlled by applying insecticide dusts or liquid insecticides in oil to the inner folds of the sheep's ear.



Spinose Ear Tick

SWINE

Flies

Most flies that are pests of cattle are also pests of swine. Refer to description and control recommendations in the Cattle section.

Hog Lice

The presence of hog lice may be indicated by excessive scratching and rubbing. This causes reddening and thickening of skin and results in reduced weight, particularly in young pigs. Heavy infestations may cause death. The life cycle is the same as that of cattle lice.

Pesticides can be applied as sprays or dusts or in oilers. Treatment must be repeated periodically for effective control. Granular formulations applied to bedding may also provide control.

Mange Mites

Burrowing mites cause mange. They can be controlled by spraying or dipping.

HORSES, MULES, AND DONKEYS

Insects and related pests that attack these animals include:

Horse and Deer Flies

See Cattle section.

Lice

For descriptions, refer to Cattle section. Damage includes loss of hair, scurfiness of skin, and irritability of the animal. Animals may become unmanageable and may injure themselves. Pesticides can be applied as sprays, dusts, washes, and wipes.

Horse Bots

The three main species—nose, chin (or throat), and common bots—of horses attach their eggs to the hair of the horse. The eggs hatch and the larvae are transferred to the animal's mouth. They migrate to the stomach, where they remain until maturity.

Horse Bot

They are then eliminated with the dung and pupate in the soil, emerging in the early summer. Horse bots usually have one generation each year.

Effective insecticide treatment is by drenching, feeding or bolusing, or oral paste, ideally after a hard freeze when adults have been eliminated.

Ticks

Most equine ticks are similar to cattle ticks. Refer to tick section under Cattle.

POULTRY

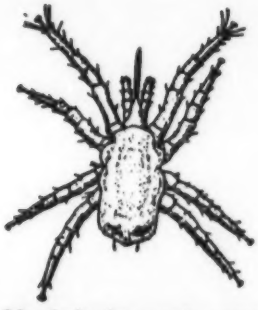
Lice

Chewing lice infest poultry. They spend their entire life on the host. Louse transmission is by direct contract with infested birds. Lice are more common during cold weather. Infested birds become restless and damage themselves by pecking at body areas. Weight gain and egg production may decrease. Insecticides can be applied by dusting or spraying the bird or providing self-treatment devices such as dust boxes.

Mites

Several species of mites infest poultry. The most common is the chicken or red mite, which feeds on blood during the night and hides in cracks of the house during the day. Another common mite is the northern fowl mite, which spends all of its life on the bird.

Chicken Mite



Infested birds develop skin irritation and anemia. If not controlled, dense mite populations may reduce weight gains and egg production or cause death.

Mite infestations are transferred from bird to bird. They sometimes are a result of invasion of poultry houses by wild birds. Other means are: infested feathers and poultry handling equipment, flats, manure, workers and poultry feet.

Control the chicken (red) mite by spraying pesticide into the cracks and crevices of the poultry house. Spray the pesticide directly on the birds for northern fowl mite control. Retreatment may be required for effective control.

Chiggers

Chiggers are a problem on range birds, primarily turkeys. Infested turkeys may be downgraded in quality by lesions caused by chigger bites. Apply pesticides to the ground as sprays or dusts. Repeated applications may be necessary.

Fowl Ticks

Although several species of ticks may infest poultry, the most prevalent is the fowl tick. The fowl tick causes about the same kind of damage as poultry mites. All forms (larvae, nymphs, and adults) attach to the skin. They suck blood and cause skin irritation. Loss of blood in chicks can be great enough to cause death. Older birds become anemic, and production is reduced.

These ticks hide in cracks and crevices in poultry houses. Infested birds also transmit ticks to other birds.

Control is by spraying pesticide in the poultry houses and directly on the birds.

Bed Bugs

Bed bugs are serious pests in poultry houses and may become a pest of man. They hide from the light

during the day and feed on poultry in the dark. They may survive for long periods without feeding. Infested poultry suffer blood loss, which may result in anemia.

Spraying recommended insecticides into cracks and crevices and wall voids in poultry houses and surrounding areas is the best method of control.

Flies

Many types of domestic flies are pests on poultry ranches. The house fly is the most common problem.

Some flies may transmit disease to poultry. Adults which disperse into the surrounding environment are a nuisance to man and may transmit human and animal diseases.

Good sanitation is important for successful fly control. Follow the recommendations in the Cattle section for house and stable fly control.

ANIMAL PREDATORS

A variety of large and small predators can attack livestock and poultry. Livestock and poultry may be injured or killed:

- by direct predator attack,
- as a result of stampeding when frightened by a predator, or
- by pedator transmitted diseases.

Predator controls consist mainly of trapping, shooting, poisoning, and correct livestock and poultry management. Control of some species and certain control methods are regulated by State and Federal laws. You must know and follow appropriate regulations. Be sure that you correctly identify the predator causing damage.

PESTICIDE APPLICATION TECHNIQUES

When using contact pesticides for external parasites, be sure the pesticides reach the pest. When using power equipment, you may need to increase the pressure to get sufficient penetration.

For applying liquid contact pesticides, use:

- power sprayers,
- knapsack sprayers,
- compressed air sprayers,
- rubbing devices (back and face rubbers), or
- pour-on treatments.

Dusts may be applied by:

- power dusters,
- knapsack dusters,
- rubbing devices, or
- individual hand treatments.

Systemic pesticides, which are transported throughout the animal's system, are applied as:

- pour-ons,
- spot treatments,
- sprays,
- feed additives, or
- dips.

PESTICIDE SAFETY

PESTICIDE TOXICITY

Pesticides can protect animals from pests, but they may be toxic to the animals being treated as well as to the pests. Apply them correctly to prevent adverse effects. Animals may be sensitive to certain pesticides. Poisoning signs usually include excessive:

- salivation,
- eye watering,
- defecation,
- urination, and
- muscle twitching.

DO NOT treat animals which are under stress or which will be put under stress. Be careful not to overdose young or smaller animals. When planning a pesticide application, chose the pesticide which has the least risk of adverse effects and will give good control.

PESTICIDE FORMULATIONS

Consider how the pesticide formulation will affect the animals. Sprays are generally suited for treating most animals, except in freezing weather. Some pour-ons, smears, and dust formulations are recommended in cold weather. Do not let oil sprays penetrate the hair to the animal's skin in any weather, unless directed on the label.

RESIDUE POTENTIAL

Follow the label recommendations closely for time intervals between application of pesticides and slaughter or marketing. Failure to do this can result in illegal residues in meat, milk, or eggs. The animals or animal products may be confiscated and you could be prosecuted.

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